

List of Claims

20. (currently amended) A spring biased mechanism comprising:

a moveable element;

a biasing spring operably coupled to bias said element toward a predetermined position with a spring preload force;

a spring preload force adjuster including a piezoelectric device operably coupled to said spring; and

said spring preload force being at least partially a function of a voltage applied to said piezoelectric device, but said piezoelectric device being inoperable to move said moveable element.

21. (original) The mechanism of claim 20 including an electrical actuator operably coupled to said moveable element in opposition to said biasing spring.

22. (currently amended) ~~The mechanism of claim 21 wherein A spring biased mechanism comprising:~~

a moveable element;

a biasing spring operably coupled to bias said element toward a predetermined position with a spring preload force;

a spring preload force adjuster including a piezoelectric device operably coupled to said spring;

said spring preload force being at least partially a function of a voltage applied to said piezoelectric device;

an electrical actuator operably coupled to said moveable element in opposition to said biasing spring; and

said electrical actuator includes a solenoid with an armature coupled to move with said moveable element.

23. (original) The mechanism of claim 22 wherein said moveable element includes a valve member in contact with a valve seat at said predetermined position.

24. (original) A method of adjusting a spring biased mechanism, comprising the steps of:

 biasing a moveable element toward a predetermined position at least in part with a spring having a spring preload force; and

 adjusting the spring preload force at least in part by adjusting a voltage applied to a piezoelectric device operably coupled to the spring.

25. (original) The method of claim 24 wherein said moveable element includes a valve member in contact with a valve seat at said predetermined position.

26. (original) The method of claim 24 including a step of moving said moveable element away from said predetermined position at least in part by energizing an electrical actuator operably coupled to said moveable element.

27. (currently amended) A system comprising:
 a plurality of spring biased mechanisms, each having a biasing spring operably coupled to bias a moveable element toward a predetermined position with a spring preload force;

each of said mechanisms including a spring preload force adjuster that includes a piezoelectric device operably coupled to said spring; and

said spring preload force being at least partially a function of a voltage applied to said piezoelectric device, but said piezoelectric device being inoperable to move said moveable element.

28. (original) The system of claim 27 including a common electrical circuit electrically connected to each said piezoelectric device.

29. (original) The system of claim 28 wherein each of said spring biased mechanisms includes an electrical actuator operably coupled to said moveable element in opposition to said biasing spring.

30. (currently amended) ~~The system of claim 29 wherein~~ A system comprising:

a plurality of spring biased mechanisms, each having a biasing spring operably coupled to bias a moveable element toward a predetermined position with a spring preload force;

each of said mechanisms including a spring preload force adjuster that includes a piezoelectric device operably coupled to said spring;

said spring preload force being at least partially a function of a voltage applied to said piezoelectric device;

a common electrical circuit electrically connected to each said piezoelectric device;

each of said spring biased mechanisms includes an electrical actuator operably coupled to said moveable element in opposition to said biasing spring; and

each said electrical actuator includes a solenoid with an armature coupled to move with said moveable element.

31. (original) The system of claim 30 wherein each said moveable element includes a valve member in contact with a valve seat at said predetermined position.

32. (new) The mechanism of claim 21 wherein said piezoelectric device, said spring and said electrical actuator are arranged in series.

33. (new) The mechanism of claim 32 wherein said piezoelectric device, said spring and said electrical actuator are aligned.